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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/509,493	05/15/2000	NAOKI OKINO	Q58562	2695

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EXAMINER

ROSSI, JESSICA

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/509,493

Applicant(s)

OKINO ET AL.

Examiner

Jessica L. Rossi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/11/03, Amendment.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Response to Amendment

1. This action is in response to the amendment dated 12/11/03. Claims 10-23 are pending.
2. Rejection of claims 10-17 and 22-23 under 35 U.S.C. 103(a) as being unpatentable over Todaka et al. (of record) in view of any one of Ichikawa et al. (of record) and Takizawa et al. (of record), as set forth in paragraph 3 of the previous office action dated 9/11/03, has been withdrawn in light of Applicants arguments.
3. Rejection of claims 18-21 under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (of record) in view of Todaka et al. and any one of Ichikawa et al. and Takizawa et al., as set forth in paragraph 4 of the previous office action, has been withdrawn in light of Applicants arguments.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 10 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (US 5795421; of record) in view of Endo et al. (US 4478775).

With respect to claim 10, Takashi is directed to a method for forming a resinous frame 17 on a panel 22 useable in the automotive industry. The reference teaches extruding, not into a mold, a resinous material 16 from a die 14 having a nozzle with a certain cross-sectional shape that is imparted to the resinous material (Figure 1; column 3, lines 7-10; column 2, lines 28-45). The reference teaches injecting the resinous material toward the die from an extruder 12 located

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upstream of the die (Figure 1). However, the reference fails to further define the type or components of the extruder and therefore is silent as to a plunger.

It is known in the art to extrude a resinous product having **uniform size and shape** (i.e. piping, sheet, film, "many others"; column 2, lines 67-68) by injecting resin toward a die 7 having a particular cross-section using an injection apparatus comprising a screw extruder 1 and a plunger 5 provided upstream of the die (column 2, lines 62-66), as taught by Endo (Figure 1; column 2, lines 20-66).

The reference addresses problems in the prior art associated with using a screw extruder alone. These problems stem from varying amounts of resin coming out of the extruder (called "surging") thereby affecting the uniformity of the final product (column 1, lines 15-22). In the past, these problems were corrected by varying the speed of the screw extruder (column 1, lines 26-28). However, changing the speed of the screw extruder changes the temperature within the extruder, which results in a change of the melting temperature of the resin; therefore, it becomes very difficult to provide a sufficient checking of surging on products exiting the die (column 1, lines 38-42).

By using the screw extruder in conjunction with a plunger, Endo is able to continuously inject a constant amount of resin toward the die without having to adjust the speed of the screw extruder, since the plunger can be controlled so as to correct for variations in the amount of resin fed to it by the screw extruder thereby ensuring that a product having uniform size and shape exits the die (column 2, lines 36-49).

Therefore, it would have been obvious to the skilled artisan at the time the invention was made to use an injection apparatus comprising a screw extruder and plunger for the generic

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extruder of Takahashi because such is known in the art for injecting resin toward a die having a cross-sectional shape for extruding simple, long profiles, as taught by Endo, and would allow for the formation of a resinous frame having uniform shape and size.

Regarding claim 22, Takahashi teaches extruding the resin onto the panel (note Figure 1 of reference almost identical to Figure 11 of present invention where present specification at p. 9, lines 1-13 talks about extruding the resin “onto the peripheral edge of the panel” when discussing the embodiment having the pressing member shown in Figure 11).

6. Claims 11 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. and Endo et al. as applied to claim 1 above and further in view of Todaka et al. (US 5807588; of record).

With respect to claim 11, most of the limitations were addressed above with respect to claim 10.

As to the limitation of the resinous material retaining a certain cross-sectional shape of the nozzle, Takahashi teaches such (Figure 1).

As to the limitation of supplying the resin through a hopper, Endo teaches supplying the resin to the screw extruder by a feeder 2, which can be any type of feeder (column 2, lines 54-57). Therefore, it would have been obvious to the skilled artisan at the time the invention was made to use a hopper because such is known feeder in the art for supplying resin to a screw extruder, as taught by Todaka (Figure 1; column 6, lines 60-65).

As to the limitation of feeding the resin into the plunger chamber by means of a metering screw, Endo teaches such (see paragraph 5 above).

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As to injecting the resin toward the die with the plunger at a certain pressure, Endo teaches such (see paragraph 5 above).

Regarding claim 23, please refer to rejection set forth for claim 22 above.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. and Endo et al. as applied to claim 10 above, and further in view of Todaka et al. and Lenhardt (US 5462199).

Regarding claim 12, Endo teaches providing a controller 13 to control an injection amount of resin from the plunger but is silent as to the controller being between the injection machine and the nozzle and controlling the amount per unit time (Figure 1; column 2, lines 36-50).

The resinous frame extruding art acknowledges the need to decrease the peripheral speed of the panel when changing from the straight edge portions of the panel to the corner portions while at the same time controlling the speed of the screw extruder so that “the discharged amount of extrusion material is relatively changed to follow up changes in the peripheral speed” in order to produce a frame having **uniform size and shape**, as taught by Todaka (column 2, lines 6-14; column 6, line 60 – column 7, line 52).

Todaka achieves this objective by controlling the speed of the screw extruder to thereby control the amount of resin injected from the extruder in response to a relative moving speed of the panel (column 11, lines 23-34). In doing so, Todaka provides a flow controller 17 between the extruder 15 and nozzle 4 (Figure 1).

Although Todaka teaches controlling the speed of the extruder to control the amount of resin injected, it is the examiner’s position that one of ordinary skill in the art would readily

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recognize that Todaka's more general teaching to **control the injection amount of resin in response to the relative moving speed of the panel** provides obvious motivation for controlling the injection amount in such a process **no matter what extrusion apparatus is employed**.

Therefore, as it is known that the injected amount of resin from an extruder is dependent on the pressure of extruding an extrusion material supplied by a molding machine actuator (Todaka, column 2, lines 15 – 18), it would have been obvious to one of ordinary skill in the art at the time of the invention to control the moving speed of the plunger in a combination plunger and screw extrusion apparatus, wherein one skilled in the art would readily recognize that the plunger is in control of the pressure of the discharging resin material.

Furthermore, since Endo teaches the plunger being controlled in a manner necessary to produce an extruded product having a uniform size and shape, it would have been obvious to the skilled artisan at the time of the invention to control the speed of the plunger in the combination plunger and screw extrusion apparatus of Takahashi and Endo such that the extrusion pressure is controlled in response to the relative moving speed of the panel with a controller provided between the injection machine and nozzle because such a control scheme is known in the art, as taught by Todaka, wherein adjusting the amount of resin extruded at the curved and straight portions of the panel is necessary to produce a frame having uniform size and shape (Todaka).

The skilled artisan would especially have been motivated to control the plunger of Takahashi and Endo in the manner disclosed by Todaka in light of the fact that it is known in the automotive industry to apply sealants and/or adhesives in the form of a continuous strip to both curved and straight portions of a panel using a combination plunger and nozzle apparatus (plunger 2, nozzle 10), wherein a controller is used to control the plunger to increase or decrease

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the discharging rate of the material being discharged from the nozzle, as taught by Lenhardt (Figures 1-2, 6; column 1, lines 31-45; column 5, lines 31-42; **column 7, lines 40-43**; column 8, lines 9-29; **column 10, lines 20-30**; column 12, lines 41-58).

NOTE: The examiner recognizes that Endo teaches controlling the plunger to inject a constant amount of resin to the die, but that is ONLY because the products being extruded are simple and linear, whereas Takahashi and Todaka are extruding a curved frame onto a moving panel having straight sides and curved corners. Therefore, the processes of Takahashi and Todaka require slowing down and speeding up the panel along the curved and straight portions thereof so that the amount of material extruded must be varied accordingly to produce a uniform frame. Therefore, since Endo and Todaka are BOTH directed to extruding a uniform product, the skilled artisan would be motivated to manipulate/control the plunger of Endo in a manner necessary to produce a uniform product, wherein the case of Takahashi that requires controlling the plunger to vary the amount of resin injected in response to the speed of the panel.

8. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al., Endo et al., and Todaka et al. as applied to claim 11 above, and further in view of Lenhardt.

Regarding claim 13, refer to the rejection set forth above for claim 12.

With respect to claim 14, most of the limitations were addressed above with respect to claims 11 and 23.

As for relatively moving the die and panel, Takahashi teaches such (abstract; column 2, lines 42-45).

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As for controlling the injection amount of the resin in response to a relative moving speed between the peripheral edge of the panel and the die, Todaka teaches such (see complete discussion of this reference as set forth above in paragraph 7).

Regarding claim 15, most of the limitations were addressed above with respect to claim 13. As for the resin flow controller being used to restrain an excess discharge in response to the relative moving speed between the panel and die, Todaka teaches such (see paragraph 7 above).

Regarding claims 16 and 17, Todaka teaches reducing the speed of the panel around its corners and in connection therewith, reducing the speed of the extrusion apparatus's actuator which in turn decreases the amount of resin supplied through the nozzle as the pressure of the extruder is directly proportional to the speed of the workpiece (column 7, line 55 – column 10, line 10). Todaka teaches raising the speed of the panel at its sides and in connection therewith, raising the speed of the extrusion apparatus's actuator which in turn increases the amount of resin supplied through the nozzle as the pressure of the extruder is directly proportional to the speed of the workpiece (column 7, line 55 – column 10, line 10).

With respect to claim 18, most of the limitations were addressed above with respect to claim 14.

As for drawing the extruded and formed resin material into a pressing member, Takahashi teaches such a pressing member 20 (Figure 1).

As for relatively moving the panel and pressing member so that the pressing member moves along the panel edge, Takahashi teaches such (Figure 1; column 3, lines 14-22).

As for unifying, during relatively moving, the extruded and formed resinous material to the peripheral edge with the pressing member, Takahashi teaches such (Figure 1).

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Regarding claim 19, all the limitations were addressed above with respect to claim 15.

Regarding claims 20-21, all the limitations were addressed above with respect to claims 16-17.

Response to Arguments

9. Applicant's arguments filed 12/11/03 have been fully considered but they are not persuasive.

10. On page 3 of the arguments, Applicants argue that Todaka teaches controlling the speed of the screw extruder and therefore modifying this reference to include a plunger would change the principle operation of the reference.

The examiner points out that Todaka is no longer being used as a primary reference and therefore is no longer being modified. In the present office action, Todaka is only being used for its teaching of controlling the amount of resin injected in response to the relative moving speed of the panel by controlling the mechanism that is in control of the pressure of the discharging resin. Therefore, and as set forth above, the skilled artisan would have been motivated to control the plunger in the combination plunger and screw extruder of Takahashi and Endo in light of the teachings of Todaka.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Jessica L. Rossi** whose telephone number is **571-272-1223**. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard D. Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jessica L. Rossi
Patent Examiner
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